A REVISION OF THE SPECIES OF AMICROCENTRINAE, A NEW SUBFAMILY (HYMENOPTERA, BRACONIDAE), WITH A DESCRIPTION OF THE FINAL LARVAL INSTAR OF *AMICROCENTRUM CURVINERVIS* BY J. R. T. SHORT

by

C. VAN ACHTERBERG

Rijksmuseum van Natuurlijke Historie, Leiden

With 68 text-figures

Abstract

A new subfamily is erected for the Afrotropical genus *Amicrocentrum* Schulz, 1911, hitherto included in the Macrocentrinae. A key to the subgenera and species is given for the first time and the species are redescribed. One new species, *Amicrocentrum exilis*, and one new subgenus, *Platyxanion*, are described. The final larval instar of *Amicrocentrum curvinervis* (Cameron) is described.

Introduction

When revising the subfamily Macrocentrinae (the genus *Macrocentrus* s.s. excluded) I had to deal with the aberrant genus *Amicrocentrum* Schulz, 1911. The species are very conspicuous, large, mostly yellow or light brown in colour and have many apomorphous (derived) character-states. Revision was difficult since there was little material in most collections. Detailed study showed that *Amicrocentrum* could not be retained in the Macrocentrinae because of the lack of synapomorphous character-states. The characters of *Amicrocentrum* differ from those of other subfamilies of Braconidae; a new subfamily is therefore erected for the genus. The distribution of *Amicrocentrum* appears to be restricted to the Afrotropical Region. An aberrant species which occurs in Malagasy is placed in a new subgenus.

The small amount of relevant literature is listed in Shenefelt (1969: 141).

Terminology

General terminology is given by Van Achterberg (1976a: 160—166). The name of the postero-basal lobe of the hind wing needs explanation. Hamilton (1971: 429) and Brothers (1975: 520) have pointed out that the use of the name anal or vannal lobe of most authors is incorrect. This lobe is bordered anteriorly by a non-functional fold (the plical furrow or fold, a "paleopterous fluting" according to Hamilton (1971: 432)) and should therefore be called a plical lobe (Brothers, 1975:

520). The main difference between an anal (vannal) fold and a plical fold is in its position. The plical fold is situated in the submediellan cell (M + Cu in fig. 32 of Brothers) and goes through the nervellus. The anal (vannal) fold is situated well below the nervellus and the submediellan cell and functions in the wing-folding process.

PHYLOGENY

The genus *Amicrocentrum* shows the following remarkable apomorphous character-states:

1. The very large plical lobe is perpendicularly setose (fig. 8). The perpendicular setosity of the lobe is unique in Braconidae, and in Hymenoptera as far as I know, and is without doubt an apomorphous character-state. The well developed plical lobe of Symphyta is a plesiomorphous character-state.

2. A medial basal hole is present in the first metasomal tergite. This depression should not be confused with the much shallower depression which is situated more basally where the adductor is attached (fig. 17). This hole is a unique development in Hymenoptera and an apomorphous character-state within the order.

3. Deep depressions are present in the first and second tergites of the metasoma of the males and these are more or less covered by fatty secretions between the pubescence (fig. 15). I am not aware of such structures in other Hymenoptera, apart from the males of *Aleiodes excavatus* (Telenga) (Braconidae, Rogadinae) (Van Achterberg, 1975: 16, fig. 1) and the males of the *striatula*-group of *Parischnogaster* Schulthess (Vespidae, Stenogastrinae) (Van der Vecht, pers. comm.). The functions of these depressions and secretions are uncertain, but the structures are an independently acquired apomorphous character-state in Hymenoptera.

4. The maxillary and labial palpi are strongly reduced and both virtually one-segmented (fig. 23). Reduction of the palpi is quite a common tendency in the Braconidae (Van Achterberg, 1976b: 35), but the condition reached in *Amicrocentrum* is extreme and a strongly apomorphous character-state. In contrast, the palpi of Macrocentrinae are well developed and consist of 5 or 6 and 4 segments, respectively.

5. The prepectal, hypostomal and occipital carinae are absent. The presence of these carinae is generally accepted as a plesiomorphous character-state. These carinae are present in many groups of Hymenoptera which are not closely related and have many other plesiomorphous character-states in common. In the Macrocentrinae the occipital carina is absent but the prepectal and hypostomal carinae are always present.

6. The dorsal carinae of the first tergite are absent (fig. 29). As shown by several groups of Braconidae with other plesiomorphous character-states, the presence of at least short basal dorsal carinae must be considered a plesiomorphous character-state within the Braconidae.

7. The pedicellus is cup-shaped (figs. 28, 33). I have not seen this peculiar shape in other Ichneumonoidea. It seems to have been derived from the common cylindrical shape.

8. The second tergite of the metasoma is less setose than the posterior half of the third tergite. Reduction in setosity is a common feature, but the pattern in *Amicrocentrum* is remarkable and apomorphous.

9. The fore tibial spur is bare, stout, curved, rather wide and flattened (figs. 57—59). In Hymenoptera a slender, more or less cylindrical, rather narrow spur with a narrow flange at the inner side is the common plesiomorphous character-state.

10. The hind tibia and tarsus are long, the length of the hind tibia being 1.9—2.4 times the hind femur (figs. 34, 56). This is a peculiar feature which is exceptional in Hymenoptera. In Braconidae the hind tibia is generally 10—35% longer than the femur.

It is striking that almost no synapomorphous character-states exist between the Macrocentrinae and the genus *Amicrocentrum*. The most important apomorphous character-states of the Macrocentrinae contain that the trochantelli are apically toothed, the claws simple or with a lobe, the occipital carina absent and the n. rec. far antefurcal. The shared character of reduction of the occipital carina is insufficient for retaining *Amicrocentrum* in the Macrocentrinae.

Plesiomorphous character-states of *Amicrocentrum* are:

1. The n. rec. is postfurcal. In Hymenoptera there is a general trend towards reduction of the apical veins with the veins becoming situated more basally. In this perspective a postfurcal n. rec. is a plesiomorphous character-state.

2. The first transverse anal vein is present. This vein is weakly developed, but its presence indicates a more complex and plesiomorphous state of venation.

3. A laterope is present. In the Ichneumonoidea this character is common in groups which show several other plesiomorphous character-states. It is most likely an early development and should be considered a plesiomorphous character-state within the Ichneumonoidea.

4. The claws are bifurcate (fig. 13). As pointed out by Brothers (1975: 521) simple bifurcate claws may be considered a plesiomorphous character-state in Hymenoptera.

5. The costa and subcosta are more or less separated from each other (fig. 8). In parasitic Hymenoptera there is usually no space between these veins or, at most, a small space apically. Because there is a well-developed cell between these veins in Symphyta, the presence of a narrow cell in the Amicrocentrinae is a plesiomorphous character-state within the Braconidae.

6. The mesoscutum is without a lateral carina. A well developed lateral carina of the mesoscutum seems to be a later development in the Braconidae.

7. The plical lobe is very large, as in the Symphyta.

The following are the more doubtful character-states of *Amicrocentrum*:

1. The ovipositor is long. An ovipositor as long as the forewing or somewhat shorter is often associated with other plesiomorphous character-states in the Braconidae. But the very long ovipositor of *Amicrocentrum* and some Macrocentrinae may be a secondary (apomorphous) development. The ovipositor of *A. seyrigi* is intermediate in length.

species	*seyrigi*	*concolor*	*curvinervis*	*exilis*	*flavipenne*	species
plesiomorphous character-state (0)						apomorphous character-state (●)
notauli present	●	○	○	○	○	notauli absent
4th tergite densely setose	●	○	○	○	○	4th tergite felty setose
mediella almost straight	○	●	●	●	●	mediella sinuate
ocelli rather small	○	●	●	●	●	ocelli large
metasoma depressed	○	○	●	●	●	metasoma compressed
clypeus convex	○	○	○	●	●	clypeus flattened
metacarpella complete	○	○	○	○	●	metacarpella reduced

Table 1. Presence or absence of apomorphous character-states in the species of *Amicrocentrum*.

2. The metasoma is inserted above the hind coxae. This is probably a plesiomorphous character-state, apart from the extreme conditions in the Cenocoeliinae and Evanioidea. It occurs in several subfamilies of the Braconidae which are not closely related (e.g., Helconinae, Macrocentrinae, Orgilinae, Agathidinae) as well as in the Ichneumonidae (subfamily Labeninae (= Labiinae sensu Townes)).

3. The radiellan cell of the hind wing is somewhat widened apically. This is probably a plesiomorphous character-state, if shown in a moderate manner as in the Amicrocentrinae.

The Amicrocentrinae are an isolated and specialized group. As shown above, it has little in common with the Macrocentrinae. It may be related to the Helconinae s.l. The genus *Brulleia* Szépligeti, in particular, shares some characters with the Amicrocentrinae, such as the large plical lobe, the dilated radiellan cell, the short second abscissa of the subcostella and the long nervellus. The tribe Trachypetini of the Sigalphinae also shows some resemblance to the Amicrocentrinae, but the nervellus is broken apically, the shape of the first metasomal tergite is quite different, the occipital and prepectal carinae are present and the absence of well-defined synapomorphous character-states indicate that the relationship is superficial. The Amicrocentrinae may be treated provisionally as an early offshoot of the Helconinae s.l. This concurs with the evidence of larval characters (figs. 2—5).

Table 1 gives the occurrence of the plesiomorphous and apomorphous states of some characters within the genus *Amicrocentrum*. These indicate the pattern of evolution within the genus. One of the two species which occur in Malagasy, *A. seyrigi*, is isolated in showing a peculiar combination of apomorphous and plesiomorphous character-states. A new subgenus is therefore erected for this species. Of the remaining four species, *A. flavipenne* is also restricted to Malagasy. This species is closely related to *exilis* and has probably developed from an invasion of an *exilis*-like ancestor. Three species occur only in continental Africa. Of these, *concolor* has the most plesiomorphous character-states and *curvinervis*, which is relatively common, has an intermediate position. *A. exilis* is rather specialized and shares some apomorphous character-states with *flavipenne*, such as the flattened clypeus and the slender first tergite (figs. 49, 68). These characters are absent in other species and indicate the close relationship shown in fig. 1.

BIOLOGY

At least two species of *Amicrocentrum* are larval parasites of large, boring caterpillars of Lepidoptera. *Amicrocentrum exilis* spec. nov. has been reared from *Eulophonotus myrmeleon* Felder (Cossidae, Cossinae). *A. curvinervis* (Cameron) has been reared from the maize stalk borer *Busseola fusca* (Fuller) (Noctuidae) and may therefore be of economic importance. The selection of boring hosts is a further plesiomorphous character-state, since braconids are considered to be derived from ectoparasites of boring coleopterous larvae.

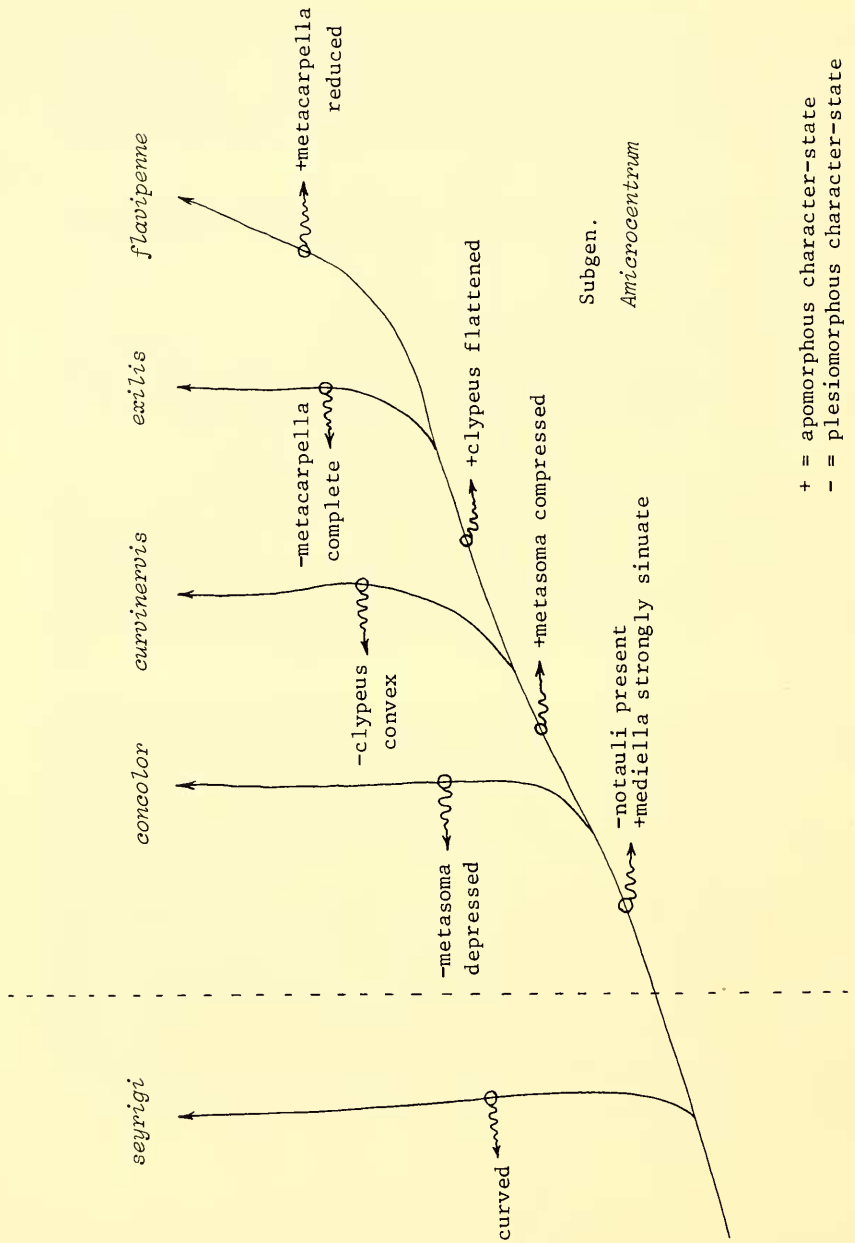


Fig. 1. Dendrogram depicting the relations of the species of *Amicrocentrum* as deducted from the data in table 1.

LARVAL CHARACTERS OF AMICROCENTRUM CURVINERVIS (figs. 2—5)

(By J. R. T. Short, Department of Zoology, Australian National University, Canberra, Australia). [1])

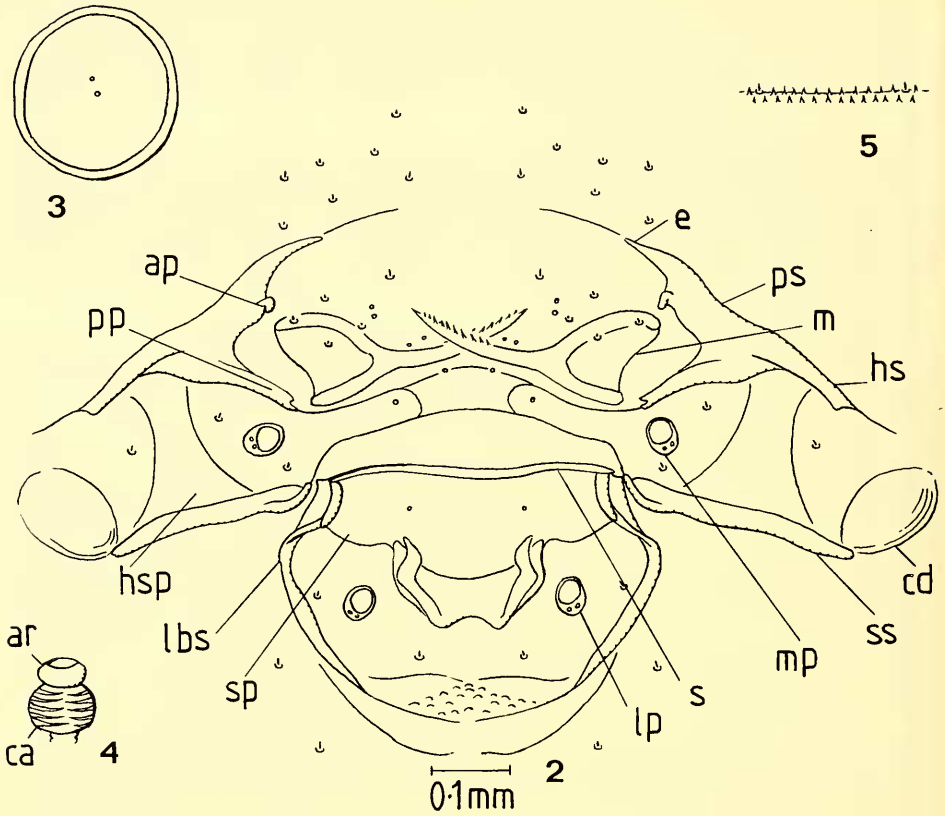
The methods used in making slide preparations from final larval instar exuviae are described in Short (1978: 4). Terminology, and its basis in comparative morphology, is given in Short (1952). Material studied: 1 male final instar larva of *Amicrocentrum curvinervis* (Cameron), "Makarere, x.1969, Uganda, Dennis Owen", "Ex larva *B. fusca*" (TC).

Description. — Of the head sclerites (fig. 2), epistoma (e) with dorsal part unsclerotized; pleurostoma (ps) very broad; anterior pleurostomal process (ap) hook-like; posterior pleurostomal process (pp) in the form of a narrow rod; hypostoma (hs) with median part only sclerotized and not extending laterally (posteriorly) beyond lateral end of stipital sclerite (ss); hypostomal spur (hsp) represented by broad and faintly sclerotized band between hypostoma and stipital sclerite; each stipital sclerite (ss) a slender rod, with median end fitting into socket in antero-lateral end of labial sclerite (lbs); each cardo (cd) represented by lightly sclerotized oval plate; labial sclerite (lbs) with lateral parts slender and sclerotized and ventral part broad and lightly sclerotized; maxillary (mp) and labial palps (lp) disc-shaped and each with one large sensillum and two very small sensilla; salivary orifice (s) prominent; silk press (sp) broad and lightly sclerotized and with two small sensilla on dorsal part; setae and sensilla present on maxillae, labium and clypeo-labrum; prelabial and labral sclerites absent; mandible (m) with triangular base and long, curved, slender blade with length about twice that of base and with prominent teeth on median half of blade. Antenna (fig. 3) disc-shaped with circumference lightly sclerotized and with two sensilla on membrane. Spiracle (fig. 4) relatively very large, with closing apparatus (ca) adjoining atrium (ar) and closing apparatus with prominent sclerotized bands on wall. Skin (fig. 5) with small setae and numerous small spines.

The cocoon of *Amicrocentrum curvinervis* is 20 × 4.5 mm, pale stramineous, moderately thin and somewhat translucent but not porous, and with very little loose silk on the surface. Emergence was by transversely cutting off one end.

Systematic position of *Amicrocentrum*. — *Amicrocentrum* shows characters resembling those of the Macrocentrinae. I know the larval characters only of *Macrocentrus* of the Macrocentrinae. *Amicrocentrum*, like *Macrocentrus* has the lateral parts of the labial sclerite slender and sclerotized and the ventral part broad and lightly sclerotized. In both genera the salivary orifice is prominent and the silk press broad and lightly sclerotized. The stipital sclerite is also similar. However, *Macrocentrus* differs from *Amicrocentrum* in that the lateral part of each hypostoma is well sclerotized and the hypostomal spur is represented by a projection on the hypostoma (Short, 1952: fig. 29). The mandibles of these genera differ in that, although both are slender in form and have the blade toothed, in *Amicrocentrum*

[1]) This work was supported by the Australian Research Grants Committee.



Figs. 2—5. Final larval instar of *Amicrocentrum curvinervis* (Cameron). 2, anterior view of head with sclerites flattened, ap = anterior pleurostomal process, cd = cardo, e = epistoma, hs = hypostoma, hsp = hypostomal spur, lbs = labial sclerite, lp = labial palp, m = mandible, mp = maxillary palp, pp = posterior pleurostomal process, ps = pleurostoma, s = salivary orifice, s = silk press, ss = stipital sclerite; 3, antenna; 4, spiracle, ar = atrium, ca = closing apparatus; 5, skin. (Drawing by J. R. T. Short).

the blade is much more slender than the base and teeth are present only on the median half of the blade. The disc-shaped antennae differ also in that the circumference is lightly sclerotized in *Amicrocentrum* but not in *Macrocentrus*. The spiracle is relatively very large in *Amicrocentrum* and distinctive in form. In *Macrocentrus*, the closing apparatus of the spiracle is only as wide as the atrium and does not adjoin the atrium. The skin also differs in these genera in that, although there are numerous small spines present on the skin in both, setae are present in *Amicrocentrum* but not in *Macrocentrus*.

Amicrocentrum, although keying out generally near the Macrocentrinae (see Čapek, 1970, 1973) must be considered to stand apart from this subfamily on the differences listed above. It is therefore recommended that, on larval characters, *Amicrocentrum* should be placed in a separate subfamily of the Braconidae.

Amicrocentrum is, as far as known, a solitary endoparasite of lepidopterous larvae. The larval characters indicate that the genus is one of the less specialized of the endoparasitic Braconidae and show a combination of generalized and specialized characters. The hypostoma and hypostomal spur are reduced but the antenna, although disc-shaped, shows a sclerotized circumference. The cardo is present, the mandible is toothed and setae are present on the skin, all of these being primitive characters. It appears that *Amicrocentrum*, like the Macrocentrinae, is an endoparasite showing only some specialized characters.

Amicrocentrinae subfam. nov.

Diagnosis. — Length of body 9.0—27.3, length of fore wing 7.4—20.9 mm; antennal segments of ♀ 46—59, of ♂ 44—53; apex of scapus truncate or nearly so; pedicellus cup-shaped, narrowed basad (fig. 33); maxillary and labial palpi reduced, very short, only visible from ventrad and both virtually one-segmented, but their bases somewhat wider and slightly differentiated (fig. 23); face unevenly convex; anterior tentorial pits large and deep (fig. 16); apical margin of clypeus not differentiated, thick, and weakly concave or almost straight medially (fig. 22); labrum not or narrowly visible; occipital and hypostomal carinae and occipital flange absent; mandible large, with two sharp and stout teeth, the second tooth much shorter than the first tooth (fig. 32); eye bare; pronope absent; propleural lamella more or less developed (fig. 30); pronotum with postero-dorsal corner somewhat protruding as does anterior part of mesopleuron; tegulae not reaching anterior margin of mesopleuron (fig. 30); prepectal carina completely absent (fig. 18); precoxal suture not or shallowly impressed (fig. 42); mesoscutum without a lateral carina in front of tegulae; metapleural flange or lamella absent; dorsal surface of propodeum not differentiated from its posterior surface (fig. 42); propodeum without areola and tubercle; antepropodeal suture narrow and deep; propodeal spiracle large; scutellar suture rather deep, wide and rather short (fig. 66); scutellum without lateral carina; metanotum with large convex tubercle posteriorly (fig. 27); metanotum with long pubescence latero-dorsally (this probably connects the plical lobe of the hind wing with the metanotum); first discoidal cell distinctly petiolate and rather wide anteriorly (fig. 25); cuqu 2 present; r 3 more or less curved towards metacarp (figs. 8, 25); n. rec. postfurcal; B 1 strongly widened apicad; cu 1 more or less weakly sinuate (figs. 8, 37); CU 1 smaller than CU 2; d 2 more or less roundly connected to s 1a (figs. 8, 25); nervulus long and straight; nervellus long, departing submedially from the mediella; B 1 closed apically, s 1b present; fringe of wings short; parastigma large; a narrow intercostal cell is more or less developed (figs. 8, 37); distal part of mediellan cell bare; aqu 1 present as a faintly-brownish, pigmented stripe (fig. 37); aqu 2 and aqu' absent; SM mainly bare except for some setae near the nervulus; CU 1 and base of aqu 1 mainly bare; metacarp ends near apex of the radial cell; plical lobe very large and with rather long and perpendicular arranged setae (fig. 25); radiellan cell widened apicad; basella and second abscissa of subcostella short (fig. 46);

metacarpella rather short and more or less straight (fig. 25); discoidella absent; hind tibia and tarsus comparatively long, length of hind tibia 1.9—2.4 times hind femur; length of femur and tibia of hind leg 5.6—7.7 and 12.0—20.3 times their width, respectively; hind tibial spurs short, straight, and setose; hind basitarsus without ventral row of setae; all tarsal claws bifurcate, setose and without subbasal lobe (fig. 65); fore tibial spur bare, curved, rather wide and flattened (figs. 57—59); hind tibia without apical spines; trochantelli simple, without teeth; metasoma inserted medially between dorsal surface of propodeum and insertion of the hind coxae (figs. 42, 54); length of first metasomal tergite 3.0—6.3 times its apical width; first tergite with a medio-basal hole (figs. 29, 41); large, deep, more or less pubescent depressions in males in the first and second tergites (fig. 15); dorsal carinae of first tergite absent (fig. 17); laterope deep, large, elliptical (fig. 42); dorsope absent; first tergite convex, but medially somewhat flattened; second tergite less setose than posterior third of third tergite; third and following tergites densely setose; second tergite without a sharp lateral crease; second and following epipleura with thyridia (fig. 6); length of ovipositor sheaths 1.10—2.01 times length of fore wing and slender; ovipositor straight or nearly so, with an indistinctly developed notch subapically, this notch being absent in *Amicrocentrum seyrigi*; hypopygium large (fig. 18).

Distribution. — Contains only one genus, *Amicrocentrum* Schulz, with five species. Two species are restricted to Malagasy and three species only occur in continental Africa.

Key to subgenera and species of the genus *Amicrocentrum*

1. Second abscissa of mediella slightly curved (fig. 8); notauli absent (fig. 11); ocelli comparatively small, OOL distinctly longer than diameter of ocellus (fig. 14); 3rd and 4th abscissae of cubitus with only yellowish pigment and not sclerotized (fig. 8); 3rd (at least apically, fig. 15) and following tergites felty setose (fig. 17) (*Platyxanion* subgen. nov.) . . . . . *seyrigi* Granger
— Second abscissa of mediella strongly sinuate (fig. 25); notauli narrowly developed (figs. 27, 40); ocelli large, OOL subequal to diameter of ocellus (fig. 20) or shorter (fig. 38); 3rd and 4th abscissae of cubitus at least weakly sclerotized (fig. 25); 3rd and following tergites only densely setose (fig. 41) (subgenus *Amicrocentrum* Schulz) 2
2. Clypeus distinctly convex and densely punctate (figs. 22, 32); pterostigma more stout (figs. 25, 37); postero-dorsal corner of pronotum more or less densely punctate, sometimes rather finely (figs. 18, 30) 3
— Clypeus flattened and punctulate (figs. 47, 62); pterostigma slender (figs. 46, 55); postero-dorsal corner of pronotum almost smooth, punctulate (figs. 42, 54) 4
3. Fourth metasomal tergite mainly dark brown; sides of 2nd tergite diverging apicad; length of 2nd tergite 1.4—1.8 times its maximum width (fig. 29); metasoma of ♀ less compressed apicad; length of ovipositor sheaths 1.24—1.50 times fore wing . . . . . *concolor* (Szépligeti)

— Fourth metasomal tergite yellowish; sides of 2nd tergite parallel; length of 2nd tergite 2.0—2.8 times its width (fig. 41), exceptionally 1.8 times; metasoma of ♀ strongly compressed apicad; length of ovipositor sheaths 1.60—2.01 times fore wing, usually 1.8—1.9 times . . . . . *curvinervis* (Cameron)

4. Metacarpella well developed basally and connected with the subcostella (fig. 46); pterostigma somewhat more slender (fig. 46); medio-basal hole of 1st tergite rather sharp posteriorly (fig. 49); length of malar space of ♀ 0.3—0.5 times basal width of mandible (fig. 47) . . . . . *exilis* spec. nov.

— Metacarpella mainly reduced, not connected with the subcostella (fig. 55); pterostigma somewhat less slender (fig. 55); medio-basal hole of 1st tergite rounded-truncate posteriorly (fig. 64); length of malar space of ♀ ca. 0.6 times basal width of mandible (fig. 62) . . . . . *flavipenne* Granger

Amicrocentrum Schulz
Platyxanion subgen. nov. (figs. 6—17)

Etymology: from "platys" (Greek for "broad, wide, flat") and "xanion" (Greek for "comb") because of the rather flat and wide fore tibial spur and comb, which serves as a cleaning-device (figs. 57—59). Gender: neuter.

Type-species: *Amicrocentrum seyrigi* Granger, 1949.

Diagnosis. — Ocelli rather small, OOL distinctly longer than diameter of ocellus (fig. 14); mandible not twisted apically; notauli absent (fig. 11); second abscissa of mediella slightly curved (fig. 8); third and fourth abscissae of radius with only yellowish pigment and not sclerotized; nervulus postfurcal or interstitial (fig. 8); radiella straight basally; nervellus distinctly reclivous (fig. 8); glymma reduced; third (at least apically) and following tergites felty setose (figs. 15, 17).

Distribution. — Malagasy: one species.

Note. Apomorphous character-states of *Platyxanion* are: 1— notauli absent; 2— third (at least partly) and following tergites felty setose; 3— reduction of sclerotization of the radius. The plesiomorphous character-states are: 1— second abscissa of mediella slightly curved; 2— ocelli comparatively small; 3— nervulus postfurcal or interstitial.

Amicrocentrum (Platyxanion) seyrigi Granger (figs. 6—17)

Granger, 1949, Mem. Inst. scient. Madagascar 2A: 374—375, fig. 380.
Shenefelt, 1969, Hym. Cat. (nov. ed.) 4(1): 141.

Lectotype, ♀, length of body 26.1, of fore wing 20.9 mm.

Head. — Antennal segments 49, length of 3rd segment 1.2 times 4th segment, length of 3rd and 4th segments 3.0 and 2.5 times their width, respectively, length of both penultimate segments 1.4 and 1.8 times their width, respectively, and apical segment with short spine (fig. 9); dorsal length of eye 1.1. times temple; temple

rugose, rounded behind, slightly wider than width of head at eyes (fig. 14); POL: ∅ ocellus: OOL= 5 : 7 : 13; frons medially concave and rugose, laterally convex and rugose as vertex; face finely punctate-rugose, depressions from antennal sockets to anterior tentorial pits present (fig. 16); clypeus rather convex, finely and densely punctate; epistomal suture indistinctly developed medially; length of malar space 0.7 times basal width of mandible; malar suture well-developed.

Mesosoma. — Length of mesosoma 1.4 times its height; side of pronotum mainly finely punctate, with some short carinae medially (fig. 6); epicnemial area densely rugose-punctate; precoxal suture densely rugose-punctate, as its surroundings (fig. 6); pleural suture deep and rather narrowly crenulate; episternal scrobe narrowly elliptical; metapleuron coarsely reticulate-punctate, but more rugose ventrally; scutellar suture with ca. 16 short carinae; scutellum convex, finely and densely punctate; side of scutellum carinate; surface of propodeum densely punctate; propodeal spiracle elliptical.

Wings. — Metacarpella complete; r 1 : r 2 : r 3 = 13 : 39 : 115; d 1 : d 2 = 4 : 73; cuqu 1 : r 2 : cuqu 2 = 24 : 39 : 29.

Legs. — Hind coxa densely and coarsely punctate dorsally, rather smooth ventrally; length of hind tibia ca. 2.1 times hind femur (fig. 10); length of femur, tibia and basitarsus of hind leg 5.0, 12.0 and 11.4 times their width, respectively; length of spurs of hind tibia 0.34 and 0.28 times basitarsus, slightly curved (fig. 10).

Metasoma. — Length of first tergite 3.5 times its apical width, its surface somewhat microsculptured medially, but mainly smooth (fig. 17); length of ovipositor sheath 1.10 times fore wing; hypopygium somewhat roundly emargined apically.

Colour. — Light brown; tibiae and tarsi more yellowish brown; wing membrane yellowish.

Lectotype in MNHN: "Madagascar, Ranomafana" "Muséum Paris, X.38. A. Seyrig", "49", "Type". Lectotype herewith selected and labelled accordingly. Paralectotypes: (MNHN) 10 ♂ of which 6 examined, all from Malagasy, Bekily and all collected in January or February. Antennal segments 44 (2), 45 (1) or 46 (1); length of fore wing 16.0—18.5, of body 19—24 mm; 1st and 2nd tergites with the typical depressions (fig. 15). Additional specimens examined, all from MNHN and collected in Malagasy: 1 ♀, Vohémar, heavily damaged, nervulus interstitial; 1 ♀, Fort Dauphin, cuqu 2 absent in right wing but in the left wing nearly complete; 1 ♂, Analandravaka, 25.III.1936, antennal segments 44, malar suture almost absent, length of fore wing 19.5, of body 26 mm.

Note. This is a very distinctive species, which is isolated from other species of *Amicrocentrum*. The species is interesting in its combination of plesiomorphous character-states, such as the slightly curved second abscissa of the mediella, and apomorphous character-states, such as the absence of notauli.

Amicrocentrum Schulz, subgenus (figs. 18—68)

Schulz, 1911, Zool. Annln 4: 88.
Szépligeti, 1904, Genera Insect. 22: 145 (*Megacentrus*; nec Heer, 1852).
Cameron, 1912, Annls Soc. ent. Belg. 56: 370 (*Eiolo*).

Type-species: *Megacentrus concolor* Szépligeti.

Diagnosis. — Ocelli large, OOL subequal to diameter of ocellus (fig. 20) or shorter (fig. 38); mandible weakly twisted apically; notauli narrowly developed (fig. 27); second abscissa of mediella strongly sinuate (fig. 25); 3rd and 4th abscissae of radius at least weakly sclerotized; nervulus narrowly antefurcal (fig. 37); basally radiella weakly curved anterad (fig. 37); nervellus straight or weakly reclivous (figs. 25, 37); glymma rather deep anteriorly; 3rd and following tergites only densely setose, pilose (fig. 49).

Distribution. — Afrotropical: four species, one restricted to Malagasy and three to continental Africa.

Note. Apomorphous character-states of *Amicrocentrum* s.s. are: 1— second abscissa of mediella strongly sinuate; 2— nervulus narrowly antefurcal; 3— ocelli large. Plesiomorphous character-states are: 1— notauli present; 2— 3rd and following tergites only densely setose; 3— radius sclerotized.

Amicrocentrum (**Amicrocentrum**) **concolor** (Szépligeti) (figs. 18—29, 57—59)

Szépligeti, 1904, Genera Insect. 22: 146, pl. 3, fig. 19 (in *Megacentrus*).
Shenefelt, 1969, Hym. Cat. (nov. ed.) 4 (1): 141.

Holotype, ♀, length of body 18.1, of fore wing 16.0 mm.

Head. — Antennal segments 48, length of 3rd segment 1.2 times 4th segment, length of 3rd and 4th segments 3.6 and 3.1 times their width, respectively, length of both penultimate segments 1.8 and 1.6 times their width, respectively, and apical segment without an apical spine (fig. 26); dorsal length of eye 2.4 times temple; temple mainly smooth, somewhat punctate ventrally and subparallel behind eyes (fig. 20); POL : ⌀ ocellus : OOL = 14 : 8 : 7; frons concave and coarsely rugose; vertex punctate; face medially smooth, laterally coarsely reticulate-punctate, with deep grooves from anterior tentorial pits to both sides of the antennal sockets (fig. 22); clypeus rather convex, punctate; epistomal suture obliterated medially; length of malar space 0.2 times basal width of mandible; malar suture narrow, indistinctly developed.

Mesosoma. — Length of mesosoma 1.4 times its height; ventral half of side of pronotum smooth, posteriorly partly coarsely rugose, remaining area remotely punctate and with a deep short crenulate suture (fig. 18); epicnemial area rugose-punctate; mesopleuron dorsally finely and densely punctate but mainly smooth near the pleural suture and ventrally more coarsely punctate; precoxal suture coarsely reticulate-punctate; pleural suture narrowly and densely crenulate, rather deep; episternal scrobe absent; metapleuron rather coarsely punctate and

ventrally rugose; scutellar suture with ca. 20 short carinae; scutellum convex, punctulate, but medially mainly smooth; side of scutellum punctate-rugose; surface of propodeum densely punctate-rugose, posteriorly more coarsely sculptured and with a rather long medial carina; propodeal spiracle subelliptical.

Wings. — Metacarpella complete; r 1 : r 2 : r 3 = 10 : 38 : 91; d 1 : d 2 = -2 : 51; cuqu 1 : r 2 : cuqu 2 = 16 : 38 : 21.

Legs. — Hind coxa densely punctate dorsally; hind tibia missing, but its length ca. 1.9—2.0 times hind femur in other specimens; length of femur, tibia and basitarsus of middle leg 6.3, 9.6, and 14.0 times their width, respectively, these measurements of the hind leg in the ♀ from Urundi are 5.7, 13.0 and 8.6 times, respectively; length of middle tibial spurs both 0.2 times their basitarsus, straight.

Metasoma. — Length of 1st tergite 3.3 times its apical width, its surface punctate-rugose, but apically smooth (fig. 29); length of 2nd tergite 1.4 times its maximum width; length of ovipositor sheath 1.24 times fore wing; hypopygium somewhat concave medio-apically.

Colour. — Light brown (but other specimens usually more yellowish); apices of mandibles and stemmaticum, blackish; pterostigma brownish yellow; wing membrane brownish; 4th segment somewhat darker brown.

Holotype in TMA: "Africa or., Kilima-Ndjaro" "Kilimandscharo" (old hand written label), "Holotype *Megacentrus concolor* Szépl., 1904, det. Papp '67", "Hym. Typ. No. 781, Mus. Budapest".

Additional specimens examined: 18 ♀, 5 ♂ and 1 specimen without metasoma. From Benin (Djougou Kouandé), Burundi (Usumbula), East Africa (Jombene Range, I could not trace this locality), Zaïre (Kivu: Kavimoira (Uvira), at light; Kasenyi), Kenya (Tsavo N.P. (E.): Lion Hill near Voi (500—600 m, deciduous orthophyll savanna, at light); Una (Nziu); Naivasha; Kenani (Mtito Andei) Samburu Game Reserve (Public Camp Site 1, at light); Galana R. (2 ml E. of Tsavo N.P.); Nakuru), Uganda (Karamoja); Ethiopia (Hawash, ca. 3500 ft.); Namibia (Hohnung); S. Africa (Shilouvana (N. Transvaal)) (MNHN, TC, USNM, MAC, BM, LH, RMNH, NMK). Variation: Length of fore wing 7.8—17.0 mm, length of 2nd tergite 1.4—1.8 times its width, antennal segments 46—52, length of ovipositor sheath 1.28—1.50 times fore wing, length of 1st tergite 2.4—3.5 times its apical width, 4th tergite mainly dark brown, contrasting with other, yellowish tergites. Collected in April (10), December (3) and July (2).

Amicrocentrum (**Amicrocentrum**) **curvinervis** (Cameron) (figs. 30—41)

Cameron, 1912, Annls Soc. ent. Belg. 56: 372 (in *Eiolo*).
Shenefelt, 1969, Hym. Cat. (nov. ed.) 4 (1): 141.

Holotype, ♀, length of body 18.5, of fore wing 12.3 mm.

Head. — Antennal segments 25, but apical part absent, length of 3rd segment 1.1 times 4th segment, length of 3rd and 4th segments 3.6 and 3.2 times their width, respectively; dorsal length of eye 2.9 times temple; temple punctate, except near

eyes, rounded behind and sides almost subparallel (fig. 38); POL : ⌀ ocellus : OOL = 11 : 11 : 6; frons medially concave, with some rugae; vertex finely and densely punctate; face coarsely and densely punctate, depressions at the inner side of the antennal sockets only (fig. 32); clypeus convex, densely punctate; epistomal suture complete; length of malar space 0.4 times basal width of mandible; malar suture narrowly developed.

Mesosoma. — Length of mesosoma 1.4 times its height; medio-anterior side of pronotum with a deep crenulate furrow, medially and apically rugose-punctate, dorso-apically densely and rather coarsely punctate, ventral half of pronotum smooth but punctulate anteriorly (fig. 30); epicnemial area punctate; precoxal suture coarsely and densely punctate, rest of mesopleuron more remotely punctate; pleural suture narrowly and indistinctly crenulate; episternal scrobe absent; metapleuron densely punctate; scutellar suture with 20, mainly rather short, carinae; scutellum rather convex, punctate laterally, almost smooth medially; side of scutellum punctate-rugose; surface of propodeum coarsely and densely punctate; propodeal spiracle subelliptical.

Wings. — Metacarpella complete; r 1 : r 2 : r 3 = 7 : 32 : 71; d 1 : d 2 = - 2 : 85; cuqu 1 : r 2 : cuqu 2 = 12 : 32 : 16.

Legs. — Hind coxa punctate dorsally; length of hind tibia ca. 2.2—2.3 times hind femur (fig. 34); length of femur, tibia and basitarsus of hind leg 6.0, 18.2 and 19.0 times their width, respectively; length of spurs of hind tibia 0.3 and 0.2 times hind basitarsus, straight.

Metasoma. — Length of 1st tergite 4.0 times its apical width, its surface densely and finely punctate, but apical and basal fifths mainly smooth; length of 2nd tergite 2.3 times its maximum width (fig. 41), sides of the tergite parallel; length of ovipositor sheath 1.77 times fore wing; hypopygium truncate apically.

Colour. — Brownish yellow; stemmaticum and tips of mandibles, dark brown; wing membrane brownish.

Holotype in MAC: "Type", Musée du Congo Belge, Kasai: Eiolo, 16—1—06, Waelbroeck", "R.Dét., E., 189", "*Eiolo curvinervis* Cam., Type" (in Cameron's handwriting), "*Amicrocentrum concolor* (Szpl.) (= *Eiolo curvinervis* Cam.), H. De Saeger, det. 1942".

Additional specimens examined: 31 ♀ and 2 ♂. From Zaïre (1 ♀ without precise locality, "*Megacentrus concolor* Szepl., det. Enderlein, 1918"; Magalo (Ubangi); Lisala Ter.; Libenge; Jaradje (Ituri, Kasima); Tuku (Haut Uelé); Moto (id.); Yebo Moto (id.); Paulis (id.); Watsa (id.); Congo da Lemba; Bambesa; Bombona (Ubangi); Gemena (id.); Bakere (id.); Kunzolo); Benin (?city); Uganda (Bwamba; Zika Forest (= near Entebbe, "ex larva *B. fusca*") (MAC, PAN, TC, LH, NMK, RMNH). The variation is considerable: length of fore wing 10.0—18.0 mm, length of ovipositor sheath 1.60—2.01 times fore wing, antennal segments 51—59, length of 1st tergite 3.1—4.4 times its apical width (exceptionally in males 2.8 times), length of 2nd tergite 2.0—2.5 times its maximum width (in males up to 2.8 times), sides of 2nd tergite parallel, 4th tergite yellowish, not contrasting with other tergites. This species, like *exilis*, seems to be more restricted to the tropical forest, while *concolor* may be restricted to more savanna-like habitats.

Amicrocentrum (Amicrocentrum) exilis spec. nov. (figs. 42—53)

Holotype, ♀, length of body 20.9, of fore wing 19.4 mm.

Head. — Antennal segments 53, 3rd segment equal to 4th segment, 3rd and 4th segments both 4.0 times their width, both penultimate segments 2.5 and 3.0 times their width, respectively, apical segment sharp apically, but spine not well developed (fig. 51); dorsal length of eye 2.3 times temple; temple almost smooth, indistinctly punctulate and rounded behind (fig. 50); POL : ∅ ocellus : OOL = 8 : 13 : 7; medially frons concave, smooth except for a few short carinae; vertex indistinctly punctulate; face below antennal sockets punctate-rugose, rest of face remotely punctate, unevenly convex dorsally, flattened ventrally; clypeus flattened, remotely punctulate; epistomal suture obliterated dorsally; length of malar space 0.5 times basal width of mandible; malar suture indistinctly developed.

Mesosoma. — Length of mesosoma 1.3 times its height; side of pronotum almost smooth, except for some crenulae medio-posteriorly and some punctulation near the margins (fig. 42); epicnemial area finely striate-rugose anteriorly, remotely punctate dorsally as surroundings of precoxal suture; precoxal suture densely and finely rugose-punctate; pleural suture narrow, rather shallow and indistinctly crenulate; episternal scrobe absent, except for an indistinct longitudinal impression; metapleuron remotely punctate; scutellar suture with 9 short carinae; scutellum convex, remotely punctulate; side of scutellum punctulate and with some carinae; surface of propodeum densely and rather finely reticulate-rugose, medially longitudinally depressed; propodeal spiracle elliptical.

Wings. — Metacarpella complete; r 1 : r 2 : r 3 = 12 : 46 : 137; d 1 : d 2 = - 3 : 100; cuqu 1 : r 2 : cuqu 2 = 17 : 46 : 23.

Legs. — Hind coxa finely and remotely punctate; length of hind tibia ca. 2.4 times hind femur (fig. 44); length of femur, tibia and basitarsus of hind leg 7.8, 18.2 and 15.8 times their width, respectively; length of hind tibial spurs 0.25 and 0.20 times hind basitarsus, slightly curved apically, but almost straight.

Metasoma. — Length of 1st tergite 4.4 times its apical width, its surface smooth, except for some microsculpture laterally, only medially sparsely setose, and medio-basal hole rather sharp apically (fig. 49); length of 2nd tergite 3.0 times its maximum width; length of ovipositor sheath ca. 1.47 times fore wing; hypopygium truncate apically.

Colour. — Brownish yellow; stemmaticum, tips of mandibles, flagellum (but apically more yellowish), wing venation (but its basal half yellowish), dark brown; pterostigma and ovipositor sheath brown; wing membrane rather hyaline.

Holotype in TC: "Zika Forest (= near Entebbe), Uganda, viii.23,'63, G. Lancaster". Paratypes: (9 ♀ and 4 ♂): 1 ♀, topotypic, ix—x.1963 (RMNH); 2 ♀ and 3 ♂, Zaïre, Eala, xi.1935, J. Ghesquière (MAC, RMNH); 1 ♀, Zaïre, Kunungu, 1938 (Nkele, coll. Schouteden) (MAC); 1 ♀, Zaïre, Riv. Busira, vi.1936, J. Ghesquière (MAC); 1 ♀, Sankuru: Katako-Kombe, 14.viii.1952, M. Fontaine (MAC); 1 ♀, Zaïre, N. Lac Kivu: Reankwi, 19.ix.1947, J. v. Leroy (RMNH); 1 ♀, Oyoko-Cacas Stn, Oyoka-Ghana, 24.ii-1959, parasite: *Eulophonotus myrmeleon*

(BM); 1 ♀, Uganda, 7 mls from Entebbe, Zika Forest, iii—vi.1961, P. S. Corbet (BM); 1 ♂, Tanzania, Ukerewe I., Father Conrad (NMK).

Variation: Antennal segments 55 (3); length of fore wing 14.0—21.0 mm; length of ovipositor sheath 1.31—1.37 times fore wing; length of 1st tergite 4.4—5.1 times its apical width, but in one male 3.2 times; length of 2nd tergite to 3.2 times its maximum width; length of malar space 0.3—0.5 times basal width of mandible.

Amicrocentrum (Amicrocentrum) flavipenne Granger (figs. 54—56, 60—68)

Granger, 1949, Mem. Inst. scient. Madagascar 2A: 373—374.
Shenefelt, 1969, Hym. Cat. (nov. ed.) 4 (1): 141.

Lectotype, ♀, length of body 27.3, of fore wing 20.9 mm.

Head. — Antennal segments 51, length of 3rd segment 1.4 times 4th segment, length of 3rd and 4th segments 4.4 and 4.2 times their width, respectively, both penultimate segments 2.4 and 2.8 times their width, respectively, apical segment without spine (fig. 67); dorsal length of eye 1.8 times temple; temple punctate, rounded behind (fig. 64); POL : ∅ ocellus : OOL = 5 : 8 : 6; frons concave, almost smooth; vertex remotely punctate; face rather flat, finely punctate, but below antennal sockets aciculate-punctulate; clypeus flattened, shiny, punctulate; epistomal suture absent dorsally; length of malar space 0.6 times basal width of mandible; malar suture absent.

Mesosoma. — Length of mesosoma 1.5 times its height; side of pronotum mainly sparsely punctulate, shiny, almost smooth, but with some carinae medio-anteriorly (fig. 54); epicnemial area almost smooth, but somewhat rugose anteriorly; precoxal suture mainly finely punctate as its surroundings, but near middle somewhat rugose (fig. 54); pleural suture narrowly crenulate; episternal scrobe almost absent; metapleuron finely and remotely punctate; scutellar suture with 9 short carinae; scutellum rather convex, remotely and finely punctate; side of scutellum punctate-rugose; surface of propodeum densely rugose-punctate, without a medial carina; propodeal spiracle circular, protruding.

Wings. — Metacarpella of hind wing scarcely developed, reduced and disconnected from the 2nd abscissa of the subcostella (fig. 55); r 1 : r 2 : r 3 = 7 : 33 : 79; d 1 : d 2 = - 2 : 69; cuqu 1 : r 2 : cuqu 2 = 10 : 33 : 11.

Legs. — Hind coxa almost smooth; length of hind tibia ca. 2.4 times hind femur (fig. 56); length of femur, tibia and basitarsus of hind leg 7.7, 20.3 and 17.5 times their width, respectively; length of spurs of hind tibia both 0.2 times their basitarsus, subequal, straight.

Metasoma. — Length of 1st tergite 6.3 times its apical width, its surface smooth but basally somewhat finely coriaceous, its medio-basal hole round apically (fig. 68); length of 2nd tergite ca. 2.9 times its maximum width; length of ovipositor sheath ca. 1.34 times fore wing; hypopygium truncate apically.

Colour. — Brownish-yellow; tips of mandibles and stemmaticum blackish; flagellum dark brown; wing membrane somewhat yellowish.

Lectotype in MNHN: "Madagascar, Rogez, Forêt cote est", "Muséum Paris,

iii.37, A. Seyrig", "53", "Type". Herewith selected as lectotype. Paralectotype: 1 ♂ (MNHN), topotypic, ii.37. Length of fore wing 20.4, of body 26.0 mm; length of 1st tergite 3.7 times its apical width.

ACKNOWLEDGEMENTS

I am much indebted to the following persons for the loan of types and/or gifts of unidentified specimens. The abbreviations used for the collections are given in brackets. Dr. J. Decelle, Musée Royal de l'Afrique Central, Tervuren (MAC); Mr. T. Huddleston, British Museum (Natural History), London (BM); Mr. K. Kabuthia, National Museums of Kenya, Nairobi (NMK); Dr. S. Kelner-Pillault & Mr. B. Sigwalt, Muséum National d'Histoire Naturelle, Paris (MNHN); Dr. E. Kierych, Instytut Zoologii, Warsaw (PAN); Dr. P. Marsh, USDA c/o U.S. National Museum, Washington (USNM); Dr. J. Papp, Zoological Department of the Hungarian Natural History Museum, Budapest (TMA); Dr. H. K. Townes, American Entomological Institute, Ann Arbor (TC); Drs. K. W. R. Zwart, Laboratorium voor Entomologie, Landbouwhogeschool, Wageningen (LH); (RMNH) = Rijksmuseum van Natuurlijke Historie, Leiden.

I wish to express my thanks to Dr. J. R. T. Short (Australian National University, Canberra) for his description of the larva, his useful suggestions and the correction of the English text.

LITERATURE

Achterberg, C. van, 1975. Een merkwaardige vondst in Voorne's duinen (Hym., Braconidae). — Ent. Ber., Amst. 35: 15—16, figs. 1—5.

———, 1976a. A revision of the tribus Blacini (Hym., Braconidae, Helconinae). — Tijdschr. Ent. 118 (7): 159—322, figs. 1—476, 2 tables.

———, 1976b. A preliminary key to the subfamilies of the Braconidae (Hym.). — Tijdschr. Ent. 119 (3): 33—78, figs. 1—123, 1 table.

Brothers, D. J., 1975. Phylogeny and classification of the aculeate Hymenoptera, with special reference to Mutillidae. — Univ. Kansas Sci. Bull. 50 (11): 483—648, figs. 1—101, tables 1—7.

Cameron, P., 1912. On the Hymenoptera from Belgian Congo in the Congo Museum, Tervueren. — Annls Soc. ent. Belg. 56: 357—401.

Čapek, M., 1970. A new classification of the Braconidae (Hym.) based on the cephalic structures of the final instar larva and biological evidence. — Can. Ent. 102 (7): 846—875, figs. 1—58.

———, 1973. Key to the final instar larvae of the Braconidae (Hym.). — Acta Inst. forest. Zvol. 259—268, 1 fig.

Granger, C., 1949. Braconides de Madagascar. — Mem. Inst. scient. Madagascar, Sér. A: 1—428, figs. 1—426.

Hamilton, K. G. A., 1971. The insect wing, part 1. Origin and development of wings from notal lobes. — J. Kansas ent. Soc. 44 (4): 421—433, figs. 1—18.

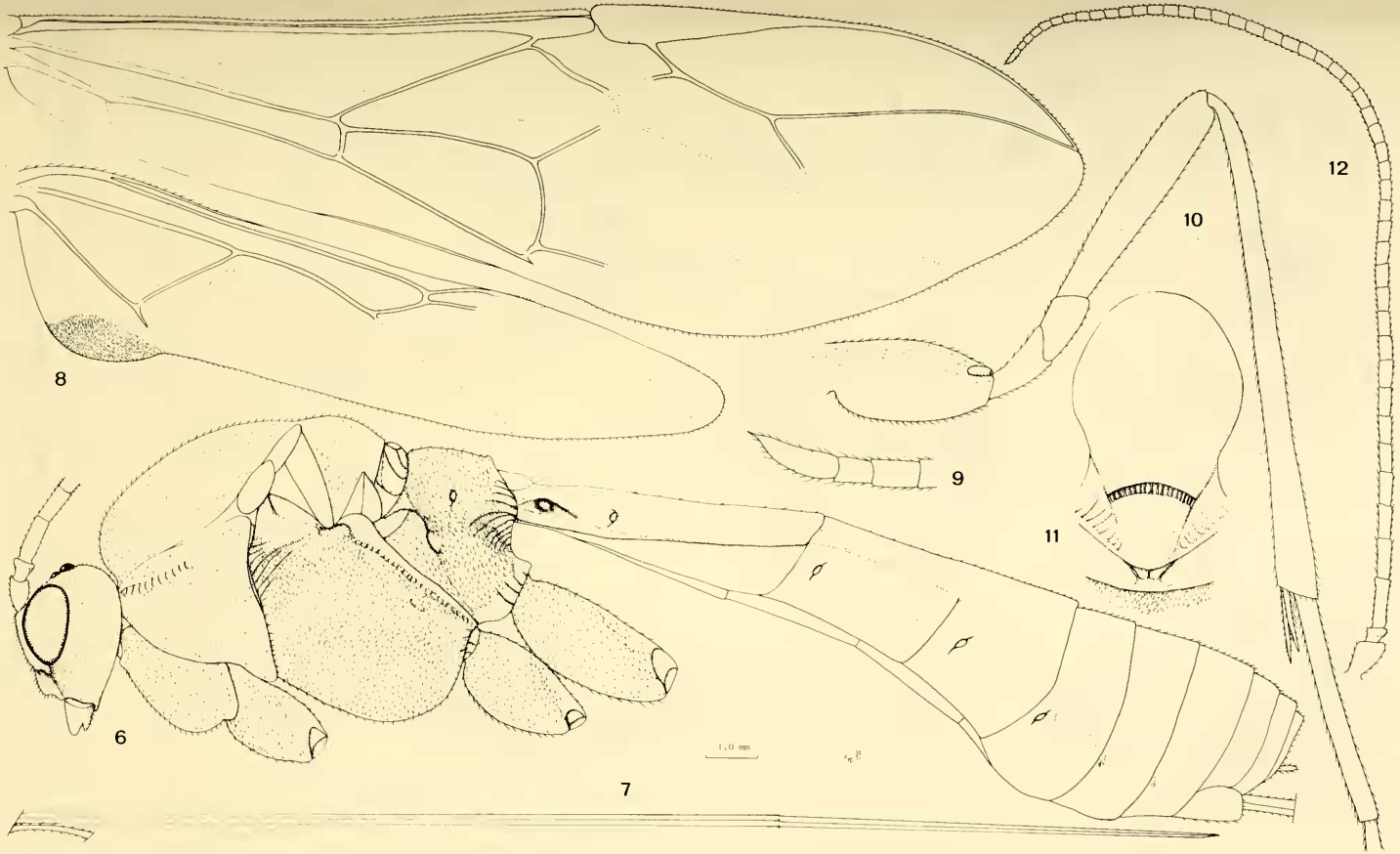
Schulz, W. A., 1911. Zwei hundert alte Hymenopteren. — Zool. Annln 4: 1—220.

Shenefelt, R. D., 1969. Hymenopterorum Catalogus (nov. ed.). Part 4. Braconidae 1: 1—176. — Junk, 's-Gravenhage.

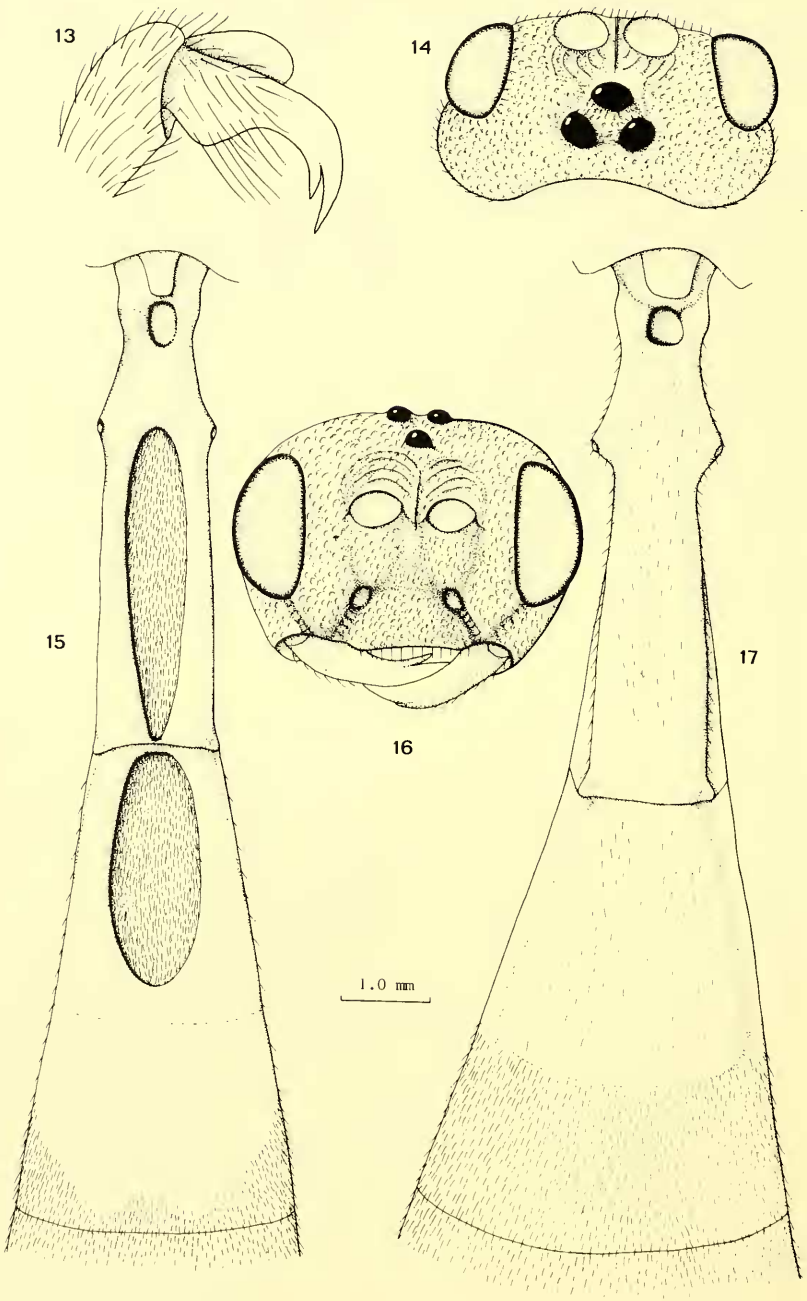
Short, J. R. T., 1952. The morphology of the head of the larval Hymenoptera with special reference to the head of the Ichneumonoidea, including a classification of the final instar larvae of the Braconidae. — Trans. R. ent. Soc. Lond. 103: 27—84, figs. 1—34.

———, 1978. The final larval instars of the Ichneumonidae. — Mem. Am. ent. Inst. 25: 1—514, figs. 1—802.

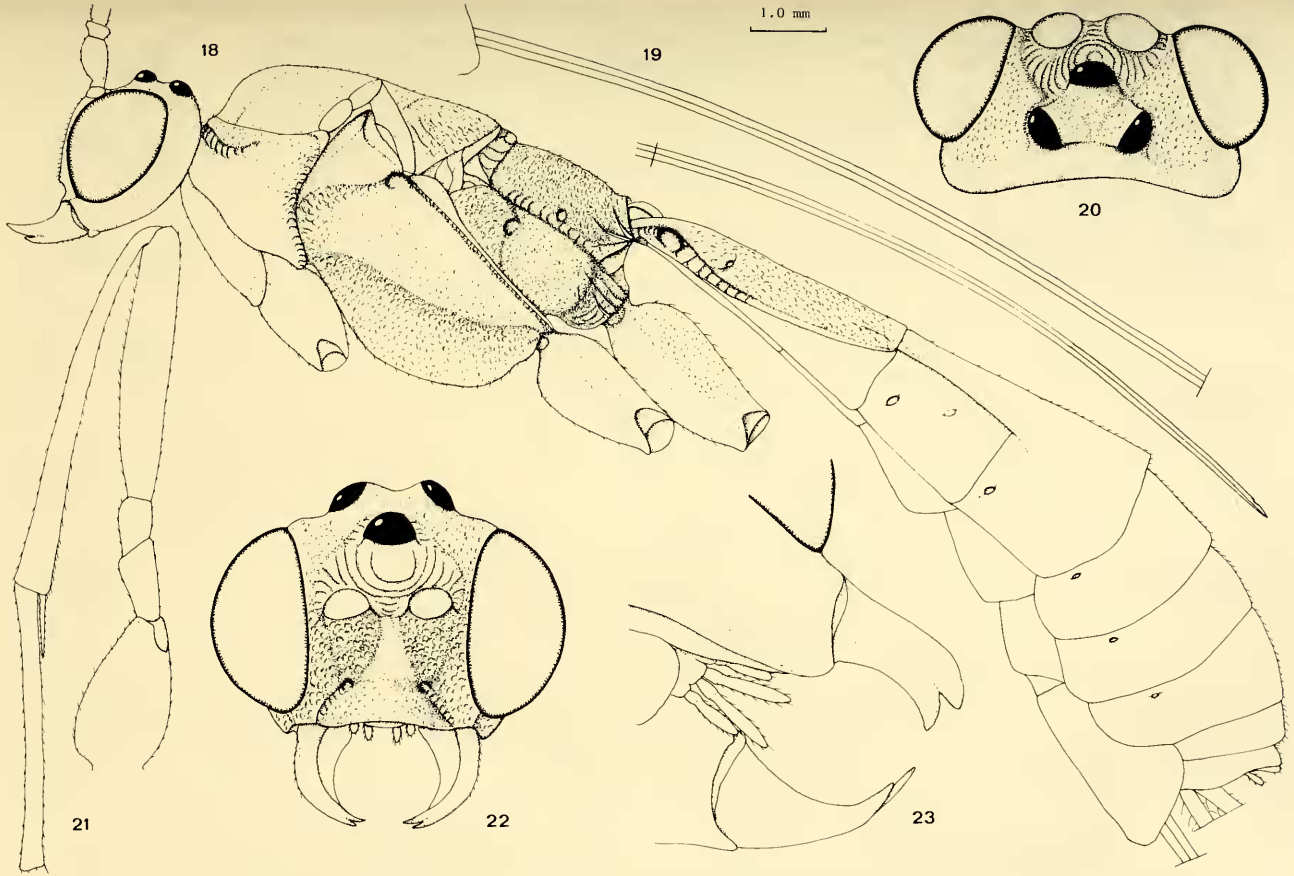
Szépligeti, G. V., 1904. Hymenoptera, Fam. Braconidae. — Genera Insect. 22: 1—253, figs. 1—32.



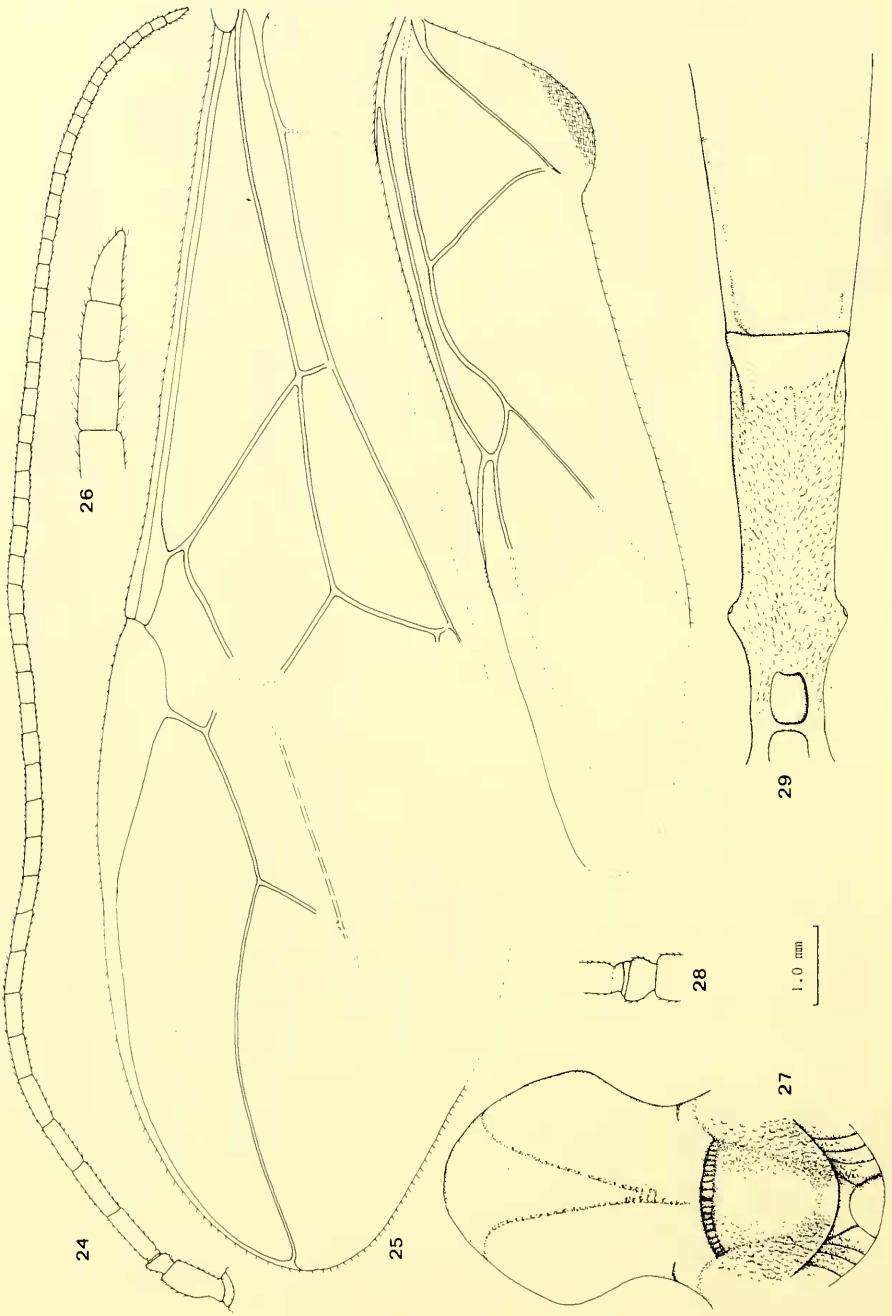
Figs. 6—12. *Amicrocentrum seyrigi* Granger, lectotype. 6, habitus, lateral aspect; 7, ovipositor; 8, wings; 9, apex of antenna; 10, hind leg; 11, mesonotum, dorsal aspect; 12, antenna. 6—8, 10—12: scale-line; 9: 5.0 × scale-line



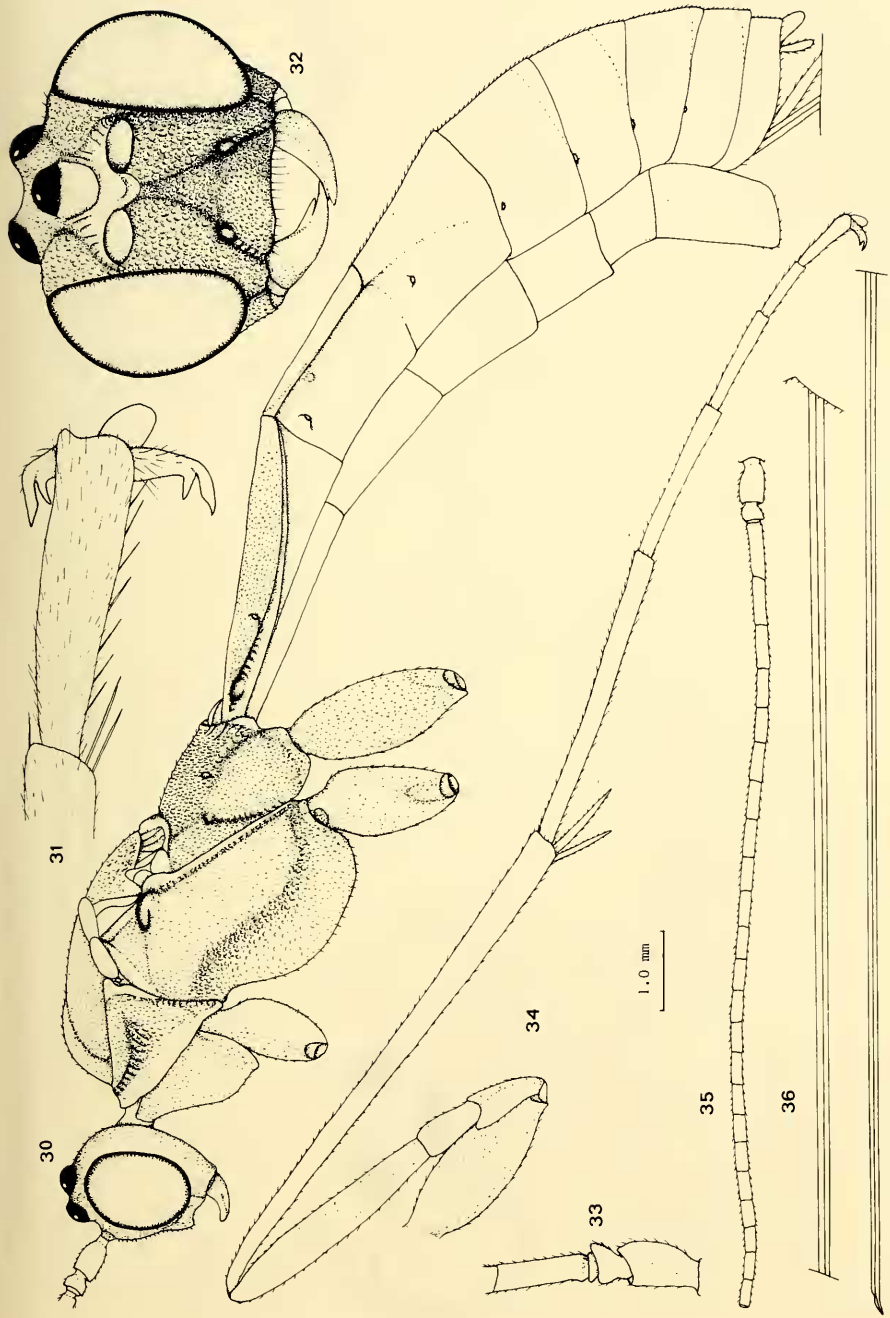
Figs. 13—17. *Amicrocentrum seyrigi* Granger, lectotype (but 15 of paralectotype). 13, outer middle claw; 14, head, dorsal aspect; 15, 1st-3rd tergites, dorsal aspect; 16, head, frontal aspect; 17, 1st-3rd tergites, dorsal aspect. 13: 5.0 × scale-line; 14—17: scale-line



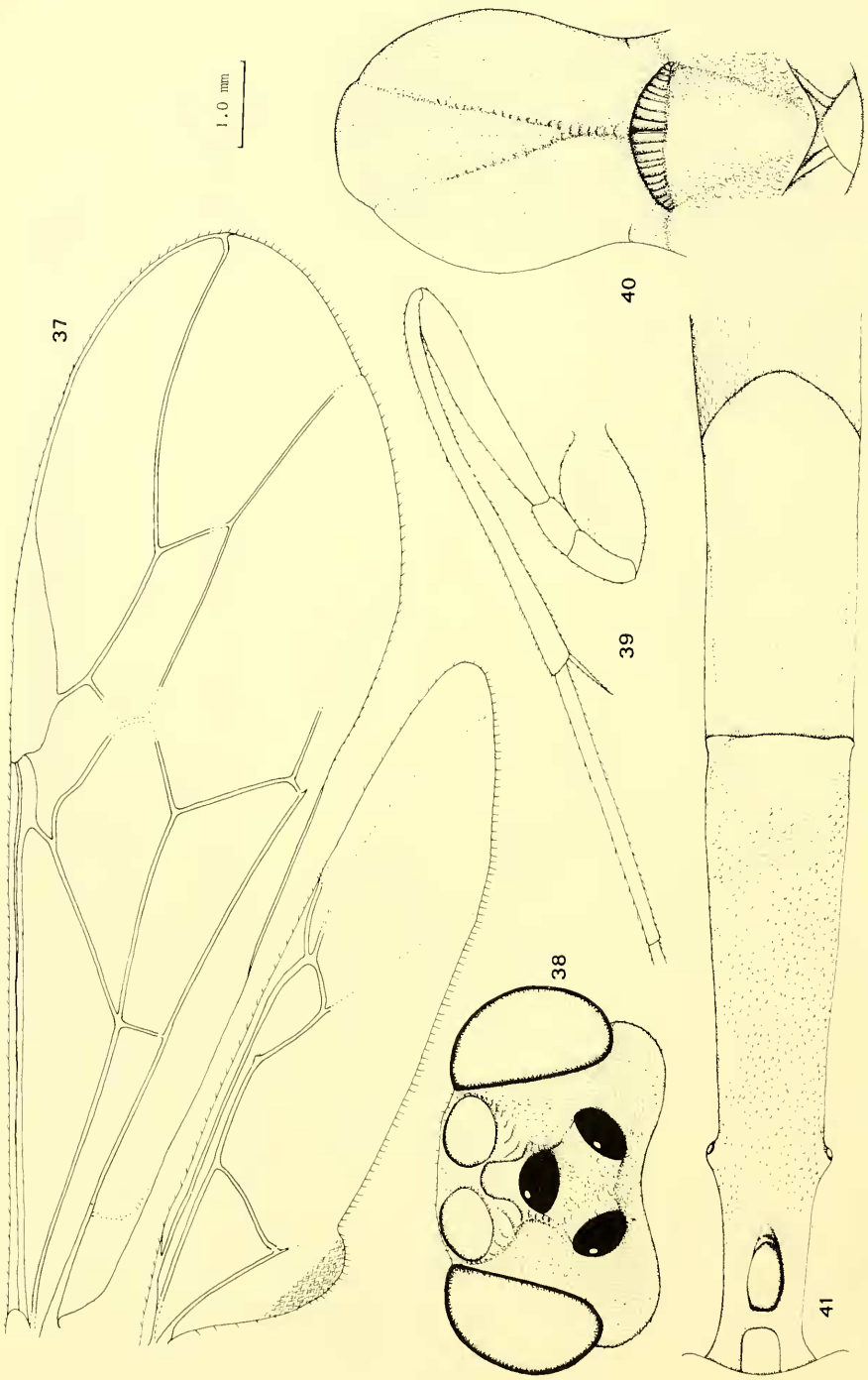
Figs. 18—23. *Amicrocentrum concolor* (Szépligeti), holotype. 18, habitus, lateral aspect; 19, ovipositor; 20, head, dorsal aspect; 21, middle leg; 22, head, frontal aspect; 23, detail of palpi. 18, 19, 21: scale-line; 20, 22: 1.3 × scale-line; 23: 2.6 × scale-line



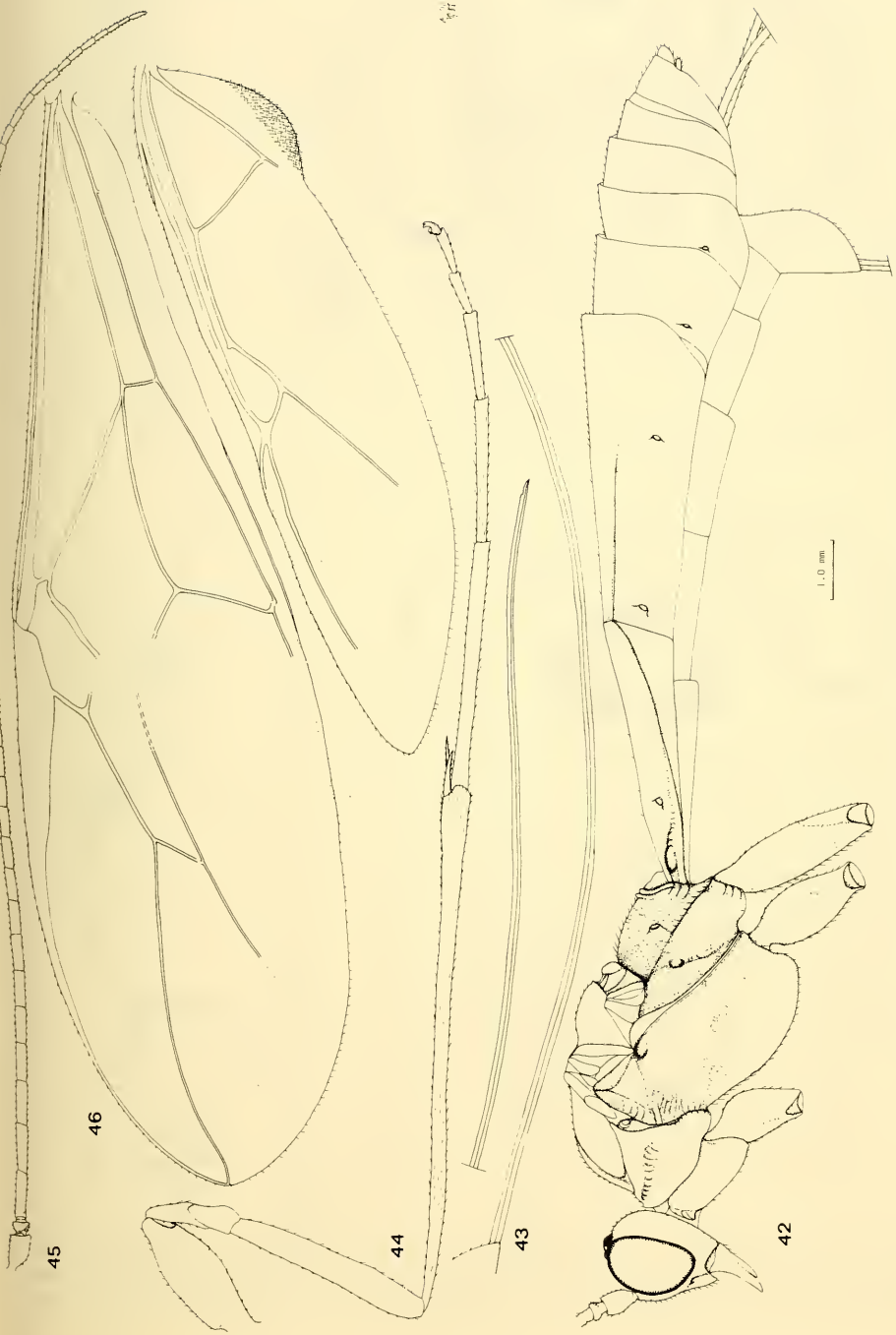
Figs. 24—29. *Amicrocentrum concolor* (Szépligeti), holotype. 24, antenna; 25, wings; 26, apex of antenna; 27, mesonotum, dorsal aspect; 28, detail of pedicellus; 29, 1st and 2nd tergites, dorsal aspect. 24, 25: scale-line; 26: 5.0 × scale-line; 27, 29: 1.3 × scale-line; 28: 2.0 × scale-line



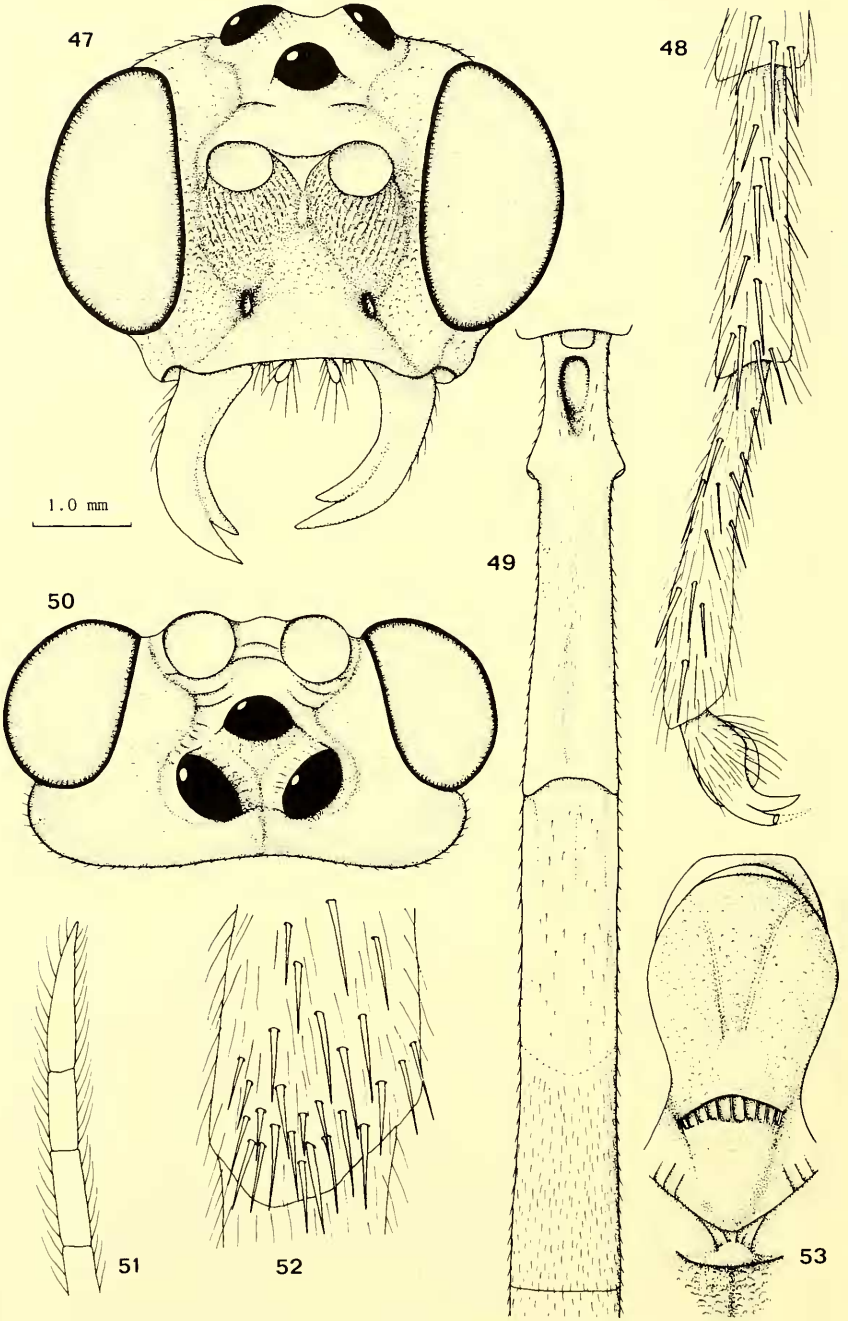
Figs. 30—36. *Amicrocentrum curvinervis* (Cameron), holotype. 30, habitus, lateral aspect; 31, hind telotarsus with full sight on outer hind claw; 32, head, frontal aspect; 33, detail of base of antenna; 34, hind leg; 35, antenna; 36, ovipositor. 30, 34—36: scale-line; 31: 5.0 × scale-line; 32, 33: 2.0 × scale-line



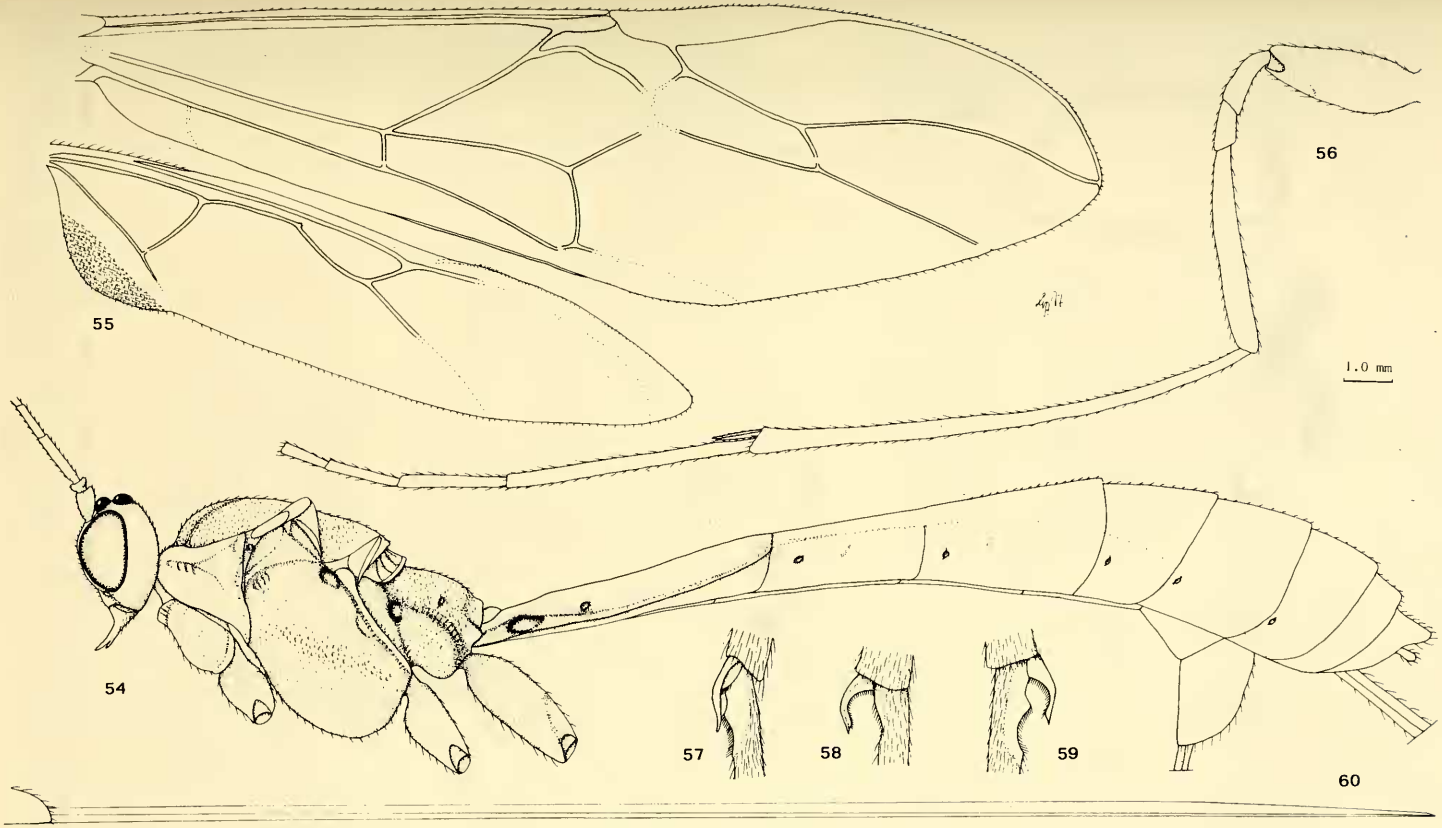
Figs. 37—41. *Amicrocentrum curvinervis* (Cameron), holotype. 37, wings; 38, head, dorsal aspect; 39, middle leg; 40, mesonotum, dorsal aspect; 41, 1st and 2nd tergites, dorsal aspect. 37, 39: scale-line; 38, 40, 41: 2.0 × scale-line



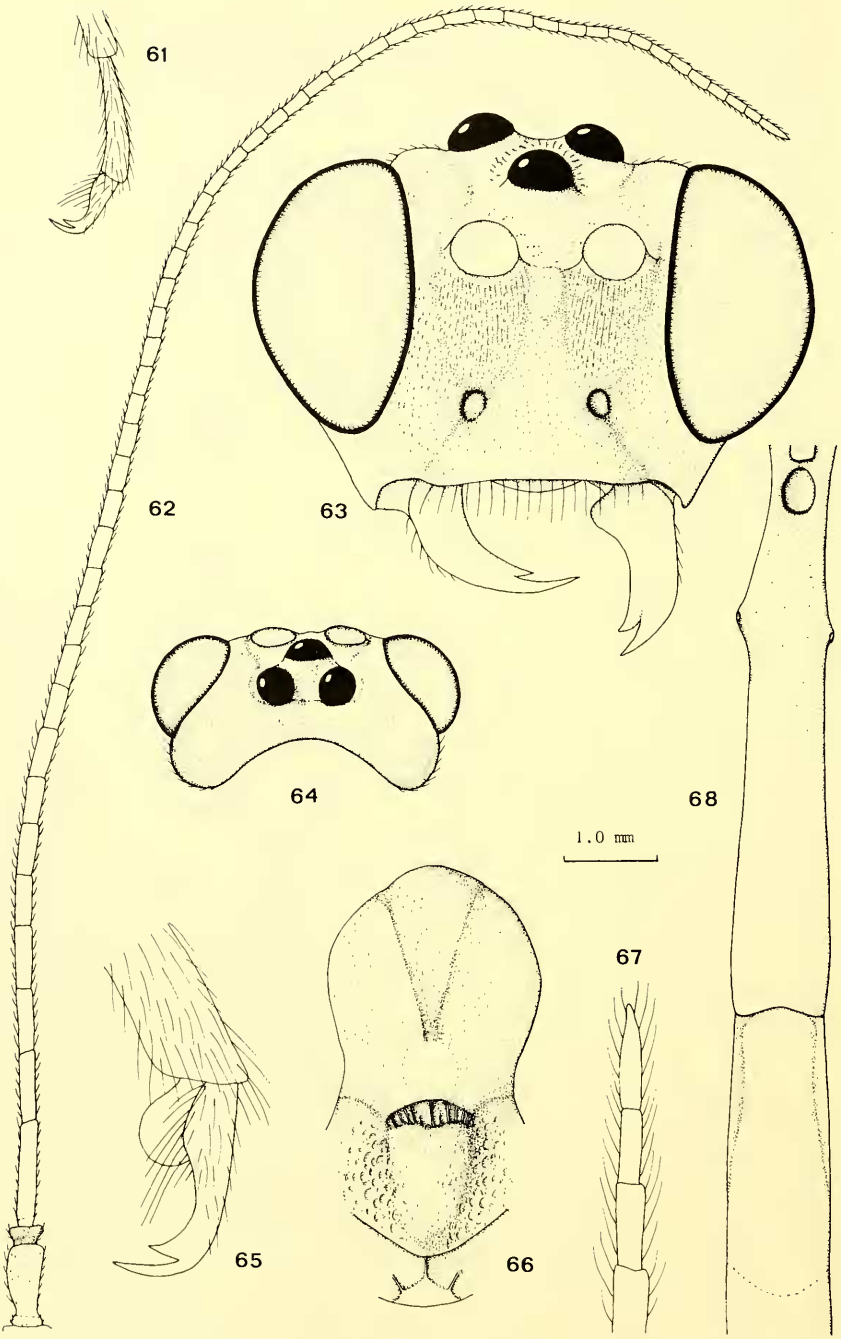
Figs. 42—46. *Amicrocentrum exilis* spec. nov., holotype. 42, habitus, lateral aspect; 43, ovipositor; 44, hind leg; 45, antenna; 46, wings. 42—46: scale-line



Figs. 47—53. *Amicrocentrum exilis* spec. nov., holotype. 47, head, frontal aspect; 48, apex of hind tarsus, outer aspect; 49, 1st—3rd tergites, dorsal aspect; 50, head, dorsal aspect; 51, apex of antenna; 52, apex of hind tibia, outer aspect; 53, mesonotum, dorsal aspect. 47, 50: 2.0 × scale-line; 48, 51, 52: 5.0 × scale-line; 49, 53: scale-line



Figs. 54—56, 60. *Amicrocentrum flavipenne* Granger, lectotype. 54, habitus, lateral aspect; 55, wings; 56, hind leg; 60, ovipositor. 57—59, *Amicrocentrum concolor* (Szépligeti), fore tibial spur of ♀, Kenya, Mtito Andei. 57, lateral aspect; 58, inner aspect; 59, outer aspect. 54—56, 60: scale-line; 57—59: 2.0 × scale-line



Figs. 61—68. *Amicrocentrum flavipenne* Granger, lectotype. 61, apex of middle tarsus; 62, antenna; 63, head, frontal aspect; 64, head, dorsal aspect; 65, inner middle claw; 66, mesonotum, dorsal aspect; 67, apex of antenna; 68, 1st and 2nd tergites, dorsal aspect. 61: 2.0 × scale-line; 62, 64, 66, 68: scale-line; 63: 1.7 × scale-line; 65: 5.0 × scale-line; 67: 4.0 × scale-line